

IN THE CLAIMS

The following is a complete listing of the claims, and replaces all earlier listings and all earlier versions.

1. (Original) A method of decoding a one-point algebraic geometric code of dimension k and length n , in which, in order to identify the position of the errors in a received word, the syndromes matrix S , of size $(n - k) \times (n - k)$, is defined, of which the elements S_{ij} of each line i are calculated, for j between 1 and $w(i)$, where the boundary w is a decreasing function, using the syndrome \underline{s} of the received word,

said method being characterized in that it comprises matrix construction steps numbered by u , during which matrices S^u are constructed starting with $S^1 = S$, and in that each matrix S^u for $u > 1$ is obtained from the matrix S^{u-1} by performing:

- where appropriate, permutations on the columns of the matrix S^{u-1} ,

then

- linear manipulations involving the line of index u of the matrix so obtained,

and in that the construction of matrices terminates when:

- either $S^u_{uj} = 0$ for all j between 1 and $w(u)$,

- or there is an integer $u^* \leq (u-1)$ such that $S^{u^*}_{u^*j} = 0$ for all j

between 1 and $w(u)$.

2. (Original) A method of decoding a one-point algebraic geometric code of dimension k and length n , in which, in order to identify the position of the errors in a received word, the syndromes matrix S , of size $(n - k) \times (n - k)$, is defined, of which the elements S_{ij} of each line i are calculated, for j between 1 and $w(i)$, where the boundary w is a decreasing function, using the syndrome \underline{s} of the received word,

said method being characterized in that it comprises matrix construction steps numbered by u , during which matrices S^u are constructed starting with $S^1 = S$, and in that each matrix S^u for $u > 1$ is obtained from the matrix S^{u-1} by performing:

- where appropriate, permutations on the columns of the matrix S^{u-1} ,

then

- linear manipulations of the line of index u of the matrix so

obtained, and in that the last step is:

- either the step of number $u = \lambda$, if an integer λ is determined such that $S^\lambda_{\lambda j} = 0$ for all j between 1 and $w(\lambda)$,

- or the step of number $u = (\lambda - 1)$, if an integer λ and an integer u^* are determined, with $u^* < \lambda$, such that $S^{u^*}_{u^* j} = 0$ for all j between 1 and $w(\lambda)$.

3. (Original) A decoding method according to claim 1 or claim 2, characterized in that the number of lines of each matrix S^u is cut off at U_{\max} , where U_{\max} is the smallest integer i for which $w(i)$ is less than i .

4. (Currently Amended) A decoding method according to ~~any one of claims 1 to 3~~ Claims 1 or 2, characterized in that the number of columns of each matrix S^u is cut off at $w(u)$.

5. (Currently Amended) A decoding method according to ~~any one of claims 1 to 3~~ Claims 1 or 2, characterized in that the number of columns of each matrix S^u is cut off at $w(\mu_D)$ for u between 1 and Duursma's minimum μ_D , and at $w(u)$ for (the case arising) u greater than μ_D .

6. (Original) An error correction device (107) for decoding a one-point algebraic geometric code of dimension k and length n , adapted to identify the position of the errors in a received word, and comprising means for defining the syndromes matrix S , of size $(n - k) \times (n - k)$, of which the elements S_{ij} of each line i are calculated, for j between 1 and $w(i)$, where the boundary w is a decreasing function, using the syndrome \underline{s} of the received word,

said error correction device (107) being characterized in that it further comprises means for constructing matrices S^u numbered by u , with $S^1 = S$, each matrix S^u for $u > 1$ being obtained from the matrix S^{u-1} by performing:

- where appropriate, permutations on the columns of the matrix S^{u-1} ,

then

- linear manipulations involving the line of index u of the matrix so

obtained,

and in that it comprises means for stopping the construction of the matrices when:

- either $S^u_{uj} = 0$ for all j between 1 and $w(u)$,

- or there is an integer $u^* \leq (u-1)$ such that $S^{u^*}_{u^*j} = 0$ for all j

between 1 and $w(u)$.

7. (Original) An error correction device according to claim 6, characterized in that it further comprises means for cutting off the number of lines of each matrix S^u at U_{\max} , where U_{\max} is the smallest integer i for which $w(i)$ is less than i .

8. (Original) An error correction device according to claim 6 or claim 7, characterized in that it further comprises means for cutting off the number of columns of each matrix S^u at $w(u)$.

9. (Original) An error correction device according to claim 6 or claim 7, characterized in that it further comprises means for cutting off the number of columns of each matrix S^u at $w(\mu_D)$ for u between 1 and Duursma's minimum μ_D , and at $w(u)$ for (the case arising) u greater than μ_D .

10. (Currently Amended) A decoder (10), characterized in that it comprises:

- at least one error correction device according to ~~any one of claims 6 to 9~~ Claims 6 or 7, and
- at least one redundancy suppression device (108).

11. (Original) Apparatus for receiving encoded digital signals (70), characterized in that it comprises a decoder according to claim 10, and in that it comprises means (106) for demodulating said encoded digital signals.

12. (Original) A computer system (70), characterized in that it comprises a decoder according to claim 10, and in that it further comprises:

- at least one hard disk, and
- at least one means (105) for reading that hard disk.

13. (Currently Amended) Non-removable data storage means, characterized in that it comprises computer program code instructions for the execution of the steps of a method according to ~~any one of claims 1 to 5~~ Claims 1 or 2.

14. (Currently Amended) Partially or wholly removable data storage means, characterized in that it comprises computer program code instructions for the execution of the steps of a method according to ~~any one of claims 1 to 5~~ Claims 1 or 2.

15. (Currently Amended) Computer program, characterized in that it contains instructions such that, when said program controls a programmable data processing device, said instructions lead to said data processing device implementing a method according to ~~any one of claims 1 to 5~~ Claims 1 or 2.